

### **REMARKS**

After entry of the present amendments, Claims 1-28 are pending in the present application and remain in this application for prosecution. Claims 1, 4-5, 11-12, 14-15, 19-20, and 26 have been amended. New claims 27-28 have been added.

#### **Section 112 Rejections**

Claims 5, 11, and 12 were rejected under 35 U.S.C. § 112, ¶ 2 as being indefinite because of the term “about.” Applicants note that the term “about” has been held to be definite and believe the rejection to be improper. *See Ex Parte Eastwood*, 163 U.S.P.Q. 316 (Bd. App. 1968); *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540 (Fed. Cir. 1983); *see also* MPEP § 2173.05(b)(A), at 2100-217 (8th ed. rev. 4 2006). However, Applicants have amended claims 5, 11, and 12 to recite “substantially” instead of “about.”

#### **Telephone Interview of August 22, 2006**

Applicants thank Examiner Cai for participating in the telephone interview with the undersigned and Inventor Bosch on August 22, 2006, in which claim 1 was discussed in connection with the primary cited reference, U.S. Patent No. 6,144,748 (Kerns). The Examiner stated his view that any wire carrying a data signal will also carry a spurious or unintended electrical signal such as noise. Applicants have therefore amended claims 1 and 26 to recite that the composite line carries a digital signal and at least one other intended or predetermined signal. Kerns nowhere teaches or suggests a composite line carrying at least two signals—a digital signal and at least one other intended or predetermined signal—on the same wire.

#### **Section 102 Rejections**

Regarding independent claims 1 and 26, as amended, they are believed to be patentable over Kerns for at least the reason discussed above.

Regarding claim 6, Applicants respectfully traverse this rejection again, noting that Kerns does not teach or disclose wherein said composite line carries at least any two of a power signal, a reference signal, a clock signal, a synchronization signal, and a data signal. The PWR and GND signals shown in FIG. 2 of Kern and cited by the Office Action are clearly carried on *separate* lines not on a line.

Regarding claim 4, it has been amended to recite that the portable communication device includes a resistor or current source that is coupled to the system bus. In Kerns, the pullup

identified by the Examiner in Table 1 is clearly external to Kern's system. Table 1 states that the CLOCK line and DATA line are each connected via a pullup to a battery voltage V+, however the description at column 4, lines 53-54 makes it clear that Table 1 is directed to the functions of the pins of the **external** connector 221 (see FIG. 1d). For example, pin V+ is connected to a battery, which is also external to the hearing device 210. Thus, the pullup referred to in Table 1 is clearly not included in the hearing device 210, and therefore claim 4 is believed to be patentable over Kerns for at least this additional reason.

Regarding claim 7, which recites wherein said digital signal is a data signal that is time multiplexed into blocks having a number of frames, each frame having at least one data slot, Kerns does not disclose any such data signal. The two-wire protocol referred to in FIG. 4 is a "simple and involves little overhead"—in other words, it is a simple two-wire point-to-point protocol. Moreover, the two-wire protocol referred to in FIG. 4 (constituting the two-wire connection between the external connector 221 and the external digital interface chip 242 shown in FIG. 2), does not constitute the claimed system bus as one wire is used for the CLOCK signal only and the other wire is used for the DATA signal only. A simple two-wire point-to-point protocol does not constitute the claimed time-multiplexed multiple-signal-carrying composite wire protocol called for by claim 4.

Regarding claim 8, Applicants traverse this rejection for at least the same reasons provided above in connection with claim 7. The two-wire I<sup>2</sup>C bus described in Table 2 does not correspond to the claimed system bus. The I<sup>2</sup>C bus is well known and contains a CLOCK line (SCL) and a serial DATA line (SDL). Applicants invited the Examiner to identify where in the I<sup>2</sup>C bus specification there is provisioning for time-multiplexing of data into multi-frame blocks, but in response, the Examiner only referred Applicants to claim 7. But claim 7 does not include the limitation, wherein each of said number of frames includes a control slot carrying control data between said master component and said at least one peripheral device, said data signal carrying *audio data*, a sample of said audio data being transferred via said system bus across at least two frames. Table 2 in Kerns refers only to the operation of the dual bus 301 in I<sup>2</sup>C mode. In this mode, the dual bus 301 in Kerns does not carry audio data.

Regarding claim 9, which recites wherein said data signal includes control data for controlling a characteristic of the at least one peripheral device, Applicants traverse this rejection

for at least the reasons provided above in connection with claim 8. In the I<sup>2</sup>C mode, the dual bus 301 does not carry a data signal that includes control data.

Regarding claims 14-16, the Examiner asserts that a wireless interface “could be an antenna.” Office Action at 4. In the claim rejections, the Examiner points to the same *auxiliary* devices 219, 243 that Applicants pointed out in the prior response were *external* to the hearing device 210. The switch 243 is clearly external to the hearing device 210, and claims 14 and 15 call for the portable communication device to *include* a wireless interface. For clarity, these claims have been amended to make it clear that the wireless interface is in the portable communication device and coupled to the system bus. Second, the Office Action cites column 2, lines 63-65, which states that “the **auxiliary** device 240 operates to receive and optionally transmit real-time data, in particular digital audio signals” and column 3, lines 46-56, which describes the structure “Within the **auxiliary** device 240.” Regarding claim 16, the Office Action cites column 2, lines 57-59, which states that the “**auxiliary** device 240 realizes a wired or wireless communication link for delivering audio information to the hearing device 210.” However, the “auxiliary” device 240 is clearly external to the hearing device 210 (see FIG. 2). Regarding the interface chip 219, FIG. 3 is a “more detailed block diagram of the interface circuit of FIG. 2,” and there is clearly no wireless interface shown there nor described anywhere in Kerns. That a wireless interface *could* include an antenna under the Examiner’s interpretation does not overcome Kerns’ failure to *disclose* an antenna on the hearing device 210. The devices inside the dashed box 250 in Kerns are clearly part of the **auxiliary** device 240, which is not part of the hearing device 210.

Regarding claim 20, it now recites that the portable communication device further includes an external interface, said external interface being coupled to said system bus and to an external system bus that includes at least two signal-carrying lines, one of said lines carrying a digital signal and at least one other intended signal between at least one external master component and an external peripheral device that includes an electro-mechanical or electro-acoustical component, said external system bus being communicatively coupled to said system bus via said external interface. Element 240 in Kerns does not correspond to an external system bus that includes a line that carries a digital signal and at least one other intended signal. Claim 20 as amended is believed to be patentable over Kerns.

Regarding claim 23, the DATA line in Kerns carries a data signal only and no other intended signal. It does not carry both control data and at least one other intended signal on the same line. For at least this additional reason, claim 23 is believed to be patentable over Kerns.

Regarding claim 24, which recites wherein said digital signal is a data signal that includes digital audio data, the DATA line in Kerns carries a data signal only and no other intended signal. It does not carry digital audio data and at least one other intended signal on the same line. For at least this additional reason, claim 24 is believed to be patentable over Kerns.

### **Section 103 Rejections**

Claims 5 and 10-12 were rejected under 35 U.S.C. § 103 as being unpatentable over Kerns. Because they depend from claim 1, which is believed to be patentable over Kerns, claims 5 and 10-12 are believed to be patentable thereover for at least the same reasons that claim 1 is patentable thereover.

Regarding claim 5, it has been amended to recite that said resistor is a pull-down resistor having a value between substantially 500 kilo-ohms to substantially 1200 kilo-ohms. The Examiner states in the Office Action that “Even if the Applicant does offer a detail why such range is selected, one skilled in the art would easily modify and calculate the resistor value based on the fact that prior art, specifically Kerns teaches the power range up to 2V.” Office Action at 5. Applicants again traverse the suggestion that the selection of the resistor values is simply a matter of obvious design choice. The resistor values represent a compromise between system speed and power consumption; they were not selected as a matter of design choice. In one embodiment, the resistor forms a passive pull down to hold the system bus at 0 volts, but its value is too high to actually ground the system bus fast enough. An active pull-down scheme is also contemplated for increased system speed, in which the “Bus Error” signal (§ 57 of Applicants’ disclosure) “always ends in logical zero.” The combination of a high resistor pull-down for low-power consumption and an active pull-down scheme for increased system speed would not have been obvious to one of ordinary skill in the art. The values had to be high enough to avoid grounding the bus too quickly while also achieving a weak pull-down effect for increased speed.

Claims 17-18 were rejected over Kerns in view of U.S. Published Patent Application No. 2003/0206237 (Imaizumi). In Applicants’ previous response, Applicants pointed out that the

correlated double sampling circuit in Imaizumi operates upon **analog** photoelectric signals before they are converted to the digital domain. The Office Action cites the Abstract of Imaizumi as disclosing double sampling of each “data bit” but Imaizumi discloses no such double sampling. The output of the CDS circuit is “gain-controlled by an automatic gain control (AGC) circuit *then A/D converted by an A/D converter into a digital signal*, and inputted into a digital signal processing circuit (DSP).” Imaizumi, ¶ 54. Thus, the CDS circuit in Imaizumi is not capable of double-sampling a data **bit**, which by definition is digital, because its input is an analog signal and its output is an analog signal, not data bits. The conventional CDS circuit disclosed in Imaizumi operates upon an **analog** video signal.

Applicants also disagree that the Imaizumi’s Coherent Double Sampling scheme is “reasonably pertinent to the particular problem with which the applicant was concerned,” Office Action at 5. The only similarity lies in the term “double sampling,” but that is where the similarities end. The application, way of operation, purpose and implementation of the claimed invention are completely different from Imaizumi. In Imaizumi, two broadly separated analog samples are taken from a video-line to improve the acquired signal to noise ratio (*See* Paragraph 54: “a video signal without black-level variation or horizontal line noise is obtained by eliminating reset noise ...” and Paragraph 61: “the mixing of noise in the CDS circuit is prevented by a predetermined period of delay...”). Imaizumi’s CDS-system is dedicated to this actual application, because the actual shape and form of the video-line is important to that application (hence the name “*coherent* double sampling”; *see* FIG. 2).

By contrast, in claims 17 and 18, each digital bit is transmitted twice to obtain the possibility for error detection upon the occurrence of external noise and/or glitches.

## **Conclusion**

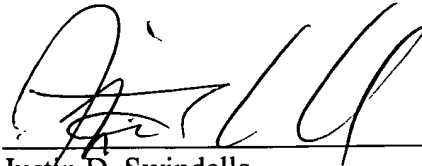
Applicants respectfully submit that the claims are in condition for allowance and such action is earnestly solicited. If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is respectfully requested to contact Applicants’ undersigned attorney at the number indicated.

A check in the amount of \$890.00 to cover the fee for a Request for Continued Examination and the additional claims is submitted herewith. It is believed that no additional

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fees are presently due; however, should any additional fees be required (except for payment of the issue fee), the Commissioner is authorized to deduct the fees from Deposit Account No. 10-0447 (47161-00041USPT) for any fees inadvertently omitted which may be necessary now or during the pendency of this application, except for the issue fee.

Respectfully submitted,



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